



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/604,086	06/25/2003	Edward J. Nowak	BUR920030005US1	1085
21918	7590	04/21/2005	EXAMINER	
DOWNS RACHLIN MARTIN PLLC 199 MAIN STREET P O BOX 190 BURLINGTON, VT 05402-0190			OWENS, DOUGLAS W	
			ART UNIT	PAPER NUMBER
			2811	

DATE MAILED: 04/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AP

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	10/604,086	NOWAK ET AL.
	<b>Examiner</b>	<b>Art Unit</b>
	Douglas W. Owens	2811

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 05 April 2005.  
 2a) This action is FINAL.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 18-31 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) 27-31 is/are allowed.  
 6) Claim(s) 19-23,25 and 26 is/are rejected.  
 7) Claim(s) 18,24 is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date: _____
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
Paper No(s)/Mail Date: _____	6) <input type="checkbox"/> Other: _____

## DETAILED ACTION

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on April 5, 2005 has been entered.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 19 – 23, 25 and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent No. 6,252,284 to Muller et al.

Regarding claim 19, Muller et al. teach a device (Fig. 14) comprising:

an integrated circuit formed on a substrate and comprising a plurality of FETs (Col. 1, lines 23 – 29) wherein at least some of the plurality of FETs are finFETs each comprising:

a fin (4) having a source portion, a drain portion and a channel portion extending between the source portion and drain portion, said fin having a base

portion disposed on the substrate, each of the source and drain portions having an upper surface;

a first spacer (12) adjacent the base portion;

a gate (21) located at the channel portion;

a first reentrant corner between the upper surface of the source portion and the gate;

a second reentrant corner between the upper surface of the drain portion and the gate;

a second spacer (23) proximate the first reentrant corner; and

a third spacer (23) proximate the second reentrant corner.

Regarding claims 20 and 25, Muller et al. teach a device, wherein the first spacer comprises silicon dioxide (Col. 6, lines 60 – 67).

Regarding claims 21 and 26, Muller et al. inherently teach an undercut region beneath a portion of the fin since the undercutting arises due to the process of removing the hardmask in forming the fin. This is further evidenced in the admitted prior art in line 8 – 11 of page 4. The undercut region would have contained a portion of the first spacer since the spacer is formed after forming the fin.

Regarding claim 22, Muller et al. teach an integrated circuit comprising:

a substrate; and

a plurality of FETs formed on the substrate, wherein at least some of the plurality of FETs are finFETs each comprising:

a fin that (4) includes a source having a base disposed on said substrate and further includes a drain and a channel extending between the source and the drain; and

a first spacer (12) adjacent the entire base portion of the source.

Regarding claim 23, Muller et al. teach an integrated circuit, wherein each of the source and drain includes an upper surface having a width perpendicular to the length, each of the finFETs further comprising:

a gate (21) located at the channel;

a first reentrant corner between the upper surface of the source and the gate;

a second reentrant corner between the upper surface of the drain and the gate;

a second spacer (23) proximate the first reentrant corner; and

a third spacer proximate the second reentrant corner.

***Allowable Subject Matter***

4. Claims 18 and 24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5. Claims 27 – 31 are allowed.

6. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record does not teach, alone or in combination, a device including "a first hardmask remnant located substantially only between said second spacer and said upper surface of said source". The prior art does not teach the first

spacer "having a length extending along the gate substantially equal to the width of the source immediately adjacent said gate".

***Response to Arguments***

7. Applicant's arguments with respect to claims 19 – 23, 25 and 26 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas W. Owens whose telephone number is 571-272-1662. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on 571-272-1732. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Douglas W Owens  
Examiner  
Art Unit 2811